NOTES ON THE GENUS MEGACHILE AND SOME RARE INSECTS COLLECTED DURING 1913-14.

By Henry Hacker, F.E.S.

There are at present ninety-eight species of *Megachile* described from Australia, of which number thirty-nine occur in Queensland. I have taken the following species, mostly in the vicinity of Brisbane, during the last two seasons.

1. M. ustulata, Sm.—Females, Brisbane, December, January. This species takes possession of crannies and holes in timber, which they line with a resinous substance. On 8th January several *M. ustulata* were noticed entering crevices (unfortunately in an awkward place for observation) under the veranda of my house. Several bees which were about to enter these crevices were captured and were all found to be carrying masses of a resinous substance in their mandibles. Even while the bees were flying, the load in their mandibles, which had a white wool-like appearance, could be distinctly seen. With some difficulty a nest was dug out, in fragments, and was seen to consist of a single cell composed of resin which was quite soft in the centre but hard and brittle on the outside. This cell contained a larva about half-grown.

2. M. mystacea, Fab.—Males, females, Brisbane, November, January, February, March. This species has similar habits to the previous one in making resinous cells. The examples bred at the Museum had appropriated an old empty nest of *Sceliphron latum*. The clay cells of the wasp had been lined with resin and the old exit-holes had been neatly sealed up with the same material. The adult bees emerged singly from each cell on 27th November.

3. M. rhodura, Ckll.—Although the nest of this bee was not found, the insect is suspected of similar nesting habits to *M. ustulata* and *M. mystacea*. On 3rd December a number were seen visiting a Eucalyptus tree from which the resin had oozed and formed several hard patches on the trunk. The bees were fairly numerous on these patches, where they would remain for several minutes at a time. They were rather shy, and would not allow one to approach within two yards of them. At that distance one could distinctly see them moving their heads, and they appeared to be rasping the patch of resin with their mandibles. As both sexes were captured on these resin-patches, it would seem that in this species the male assists the female in constructing their cells.

4. M. hackeri, Ckll.—Males, females, Kelvin Grove, September, November, January, March; Sunnybank, September; Bribie Island, November. Two males and three females of this species were bred from an old clay nest of *Abispa*, which was obtained at Darra on 17th June. The bees emerged on 23rd December. This species also belongs to the "resin-workers," the cavities in the clay nest being lined and the entrance holes filled with resin in a similar manner to *M. derelicta*, but in these nests the resin is of a deep red colour and must be obtained from a different source.

5. M. rhodogastra, Ckll.—Males, females, Brisbane, Acclimatisation Gardens, November, February; also a variety of male from same locality, December. This species was bred from a nest found inside an iron pipe. The nest was of the usual elongate shape, made of pieces of leaves, from which five males and four females emerged. I should like to mention that in fresh specimens of males the colour is deeper than as stated in Professor Cockerell's description, the hair on the sides and apex of the abdomen being orange, while the hair on the face is pale golden.

6. M. chrysopyga, Sm.—Males, females, Brisbane, September, October, March, April. On flowers of *Daviesia ulicina*. A nest of this species was found at Kelvin Grove under some loose bark on a log. The cells were made of pieces of leaves, and the nest was of the usual cigar shape. Seven bees emerged in October.

A curious fact which is brought to light by the preceding notes is that all the four species which have been found to construct resinous nests have parallel-sided abdomens, while the two leaf-cutting species which were bred have shovel-shaped ones. This may be only a coincidence, but should the analogy between the form and habits of these bees remain constant, which can only be ascertained by breeding a larger number of species, it might be possible to divide this very large genus into two divisions according to the material which they utilise for nesting purposes.

7. M. pictiventris, Sm.—Brisbane, February; on flowers of *Duranta*. This species has a curious habit, when disturbed, of dropping from the flower perpendicularly for eighteen inches or two feet before taking wing. It was owing to the loss of several specimens through making a horizontal instead of an upward sweep with the net, that I became aware of this peculiarity. A number of wasps belonging to the family Thynnidæ have a similar habit of dropping before taking wing.

8. M. austeni, Ckll.—Stradbroke Island, December; both sexes on flowers of *Ipomœa*. The female, which differs in appearance from the male, has not previously been described. Female: Length about 15 mm.; expanse of wings about 22 mm. Face clothed with white hairs mixed with black, giving it a greyish appearance; cheeks, prothorax, and sides of median segment grey; vertex,

mesothorax, and scutellum with black hair; there is a small patch of white hair on each side at base of tegulæ. Antennæ black, short; scape about one third the length of flagellum. Anterior wings with apical half pale brown as in male, but the first recurrent nervure enters second submarginal cell nearer to the first transverso-cubital nervure than in the male. Legs black, stout, clothed with black hair; posterior legs very long and stout; hind tibiæ and first joint of tarsi densely clothed with black hair on inner side; hind spurs black. Abdomen black, elongate, parallel-sided, with a thin white fringe at apex of each segment, widest at sides; thick black hair at sides and apex of abdomen; ventral scopa black.

The female differs from the male in its larger size, darker clothing, position of first recurrent nervure, and the long posterior legs, which are larger in proportion to the size of the insect than in any other *Megachile* with which I am acquainted. Described from four females.

9. M. suffusipennis, Ckll.—Males, females, Brisbane, September, October, December, January; on flowers of *Daviesia ulicina.* The male, which has not been previously described, is smaller than the female. Its length is 11 mm. The chief difference between the sexes is that in the male the face is densely clothed with long golden hair; which on the clypeus is directed downwards, on the front, upwards; while on the facial foveæ it is directed outwards towards the eyes. Other markings and colours are exactly as in the female. Antennæ black, a little longer than in the female.

10. M. macularis, D.T.—Males, females, Brisbane, November, January, March; on flowers of *Bursaria spinosa.*

11. M. abdominalis, Sm.—Males, females, Sunnybank, September, October; on flowers of *Jacksonia scoparia.*

12. M. ferox, Sm.—Males, Brisbane, September, October; on flowers of *Daviesia ulicina.*

13. M. heliophila, Ckll.—Males, Sunnybank, September; Kelvin Grove, September: on flowers of *Daviesia ulicina.*

14. M. quinquelineata, Ckll.—Females, Kelvin Grove, October, November, February, March; on flowers of *Daviesia ulicina.*

15. M. simplex, Sm.—Males, females, Kelvin Grove and Sunnybank, September, October, November; on flowers of *Daviesia ulicina.*

It will be noticed that a large number of species were taken at flowers of *Daviesia ulicina.* This plant is a great resort for bees in this district belonging to the genus *Megachile,* as it flowers more or less all the summer. I have noticed that they occasionally leave it for some of the Eucalypts, but usually return when the Eucalpytus flowers are over.

16. M. serricauda, Ckll.—Males, Brisbane, February; on flowers of *Mesembryanthemum.*

17. M. recisa, Ckll.—Males, females, Brisbane, September, October; on flowers of *Daviesia ulicina.*

18. M. derelicta, Ckll.—Males, females, Kelvin Grove, September, October, December; on flowers of *Daviesia ulicina.*

It will be seen by the dates of capture of some of the commoner species that there is a spring and an autumn brood. I am of opinion that when further data is available it will be found that every species, even the largest, is double-brooded; the long summers which we enjoy here making this easily possible.

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Order HYMENOPTERA, Family MASARIDÆ.

Paragia hirsuta, Meade-Waldo.—A male of this rare insect was taken at Sunnybank, near Brisbane, on 14th November. This is the second recorded example, the type, also a male, being taken by F. P. Dodd at Cairns, North Queensland. Unfortunately I did not recognise the prize when it was captured, or I would have noted the circumstances with a view to getting more. A large number of *Odynerus* and *Alastor* were being taken at the time, and the *Paragia* was bottled under the erroneous impression that it was an *Odynerus.* Nothing appears to be known about the life-history of *Paragia hirsuta,* but the fact that it was captured along with the two species mentioned suggests that it is in some way associated, perhaps as a parasite, with them. The capture of this insect in this locality is extremely gratifying in consideration of the facts stated by the describer of the species[1]:—"The rarity of these insects is shown by the fact that such diligent collectors as Mr. R. E. Turner and his brother the late Gilbert Turner only collected one specimen during a twenty years' residence in North Queensland, while Dr. Perkins, to whom the Museum is indebted for the species described below, has only received three specimens from Mr. F. P. Dodd at long intervals."

Family MEGALYRIDÆ.

Megalyra minuta, Froggatt.—A female was taken at Sunnybank, near Brisbane, on 19th November. It was found at rest on the trunk of a large Eucalyptus tree. The head has not previously been described, as it was missing in the type specimen. It is globular, wider than the thorax, and connected with the thorax by a distinct neck; black, shining, covered with coarse but shallow punctures, and with scattered black hairs, longest on the vertex; eyes prominent, oval; face from just above insertion of antennæ to mandibles abruptly truncate; antennæ 14-jointed, basal joints bright ferruginous, gradually getting darker, apical joints black, basal joint swollen, glabrous, second joint about half the length of third, the third and following joints of equal length, and covered with a fine pubescence, mandibles ferruginous.

[1] Ann. Mag. Nat. Hist., ser. 8, vol. viii, p. 747, 1911.